## What is claimed is:

- 1. A light-emitting device, comprising:
- a substrate;
- 5 a SiN/Al<sub>1-x-y</sub>In<sub>x</sub>Ga<sub>y</sub>N  $(0 \le x \le 1, 0 \le y \le 1, x+y \le 1)$  superlattice buffer layer located on the substrate; and

an illuminant epitaxial structure located on the SiN/Al<sub>1-x-y</sub>In<sub>x</sub>Ga<sub>y</sub>N ( $0 \le x \le 1$ , 0  $\le y \le 1$ ,  $x+y \le 1$ ) superlattice buffer layer.

- 2. The light-emitting device according to claim 1, wherein the substrate is a transparent substrate.
  - 3. The light-emitting device according to claim 1, wherein the substrate is a sapphire substrate.

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- 4. The light-emitting device according to claim 1, wherein a material of the substrate is selected from the group consisting of Al<sub>2</sub>O<sub>3</sub>, SiC, Si, GaN and GaAs.
- 5. The light-emitting device according to claim 1, wherein a thickness of the SiN/Al<sub>1-x-y</sub>In<sub>x</sub>Ga<sub>y</sub>N  $(0 \le x \le 1, 0 \le y \le 1, x+y \le 1)$  superlattice buffer layer is between about 10Å and 2000Å.
- 6. The light-emitting device according to claim 1, wherein a number of SiN/Al<sub>1-x-y</sub>In<sub>x</sub>Ga<sub>y</sub>N (0≤x≤1, 0≤y≤1, x+y≤1) structures in the SiN/Al<sub>1-x-y</sub>In<sub>x</sub>Ga<sub>y</sub>N
  25 (0≤x≤1, 0≤y≤1, x+y≤1) superlattice buffer layer is greater than or equal to 2.

7. The light-emitting device according to claim 1, wherein a composition of the  $SiN/Al_{1-x-y}In_xGa_yN$   $(0 \le x \le 1, 0 \le y \le 1, x+y \le 1)$  superlattice buffer layer is selected from the group consisting of a  $Al_{1-x-y}In_xGa_yN$   $(0 \le x \le 1, 0 \le y \le 1, x+y \le 1)/SiN$  structure and a  $SiN/Al_{1-x-y}In_xGa_yN$   $(0 \le x \le 1, 0 \le y \le 1, x+y \le 1)$  structure, and a material in contact with the substrate is selected from the group consisting of SiN and  $Al_{1-x-y}In_xGa_yN$   $(0 \le x \le 1, 0 \le y \le 1, x+y \le 1)$ .

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- 8. The light-emitting device according to claim 1, wherein the light-emitting device is selected from the group consisting of a light-emitting diode and a laser diode.
  - 9. A method for manufacturing a light-emitting device, comprising: providing a substrate;

forming a SiN/Al<sub>1-x-y</sub>In<sub>x</sub>Ga<sub>y</sub>N ( $0 \le x \le 1$ ,  $0 \le y \le 1$ ,  $x+y \le 1$ ) superlattice buffer layer on the substrate; and

forming an illuminant epitaxial structure on the SiN/Al<sub>1-x-y</sub>In<sub>x</sub>Ga<sub>y</sub>N ( $0 \le x \le 1$ , 0  $\le y \le 1$ ,  $x+y \le 1$ ) superlattice buffer layer.

- 10. The method for manufacturing a light-emitting device according to claim 9,
  20 wherein in the step of forming the SiN/Al<sub>1-x-y</sub>In<sub>x</sub>Ga<sub>y</sub>N (0≤x≤1, 0≤y≤1, x+y≤1) superlattice buffer layer, a temperature for growing SiN of the SiN/Al<sub>1-x-y</sub>In<sub>x</sub>Ga<sub>y</sub>N (0≤x≤1, 0≤y≤1, x+y≤1) superlattice buffer layer is between about 200°C and 900°C.
- 11. The method for manufacturing a light-emitting device according to claim 9,
   25 wherein in the step of forming the SiN/Al<sub>1-x-y</sub>In<sub>x</sub>Ga<sub>y</sub>N (0≤x≤1, 0≤y≤1, x+y≤1)

superlattice buffer layer, a temperature for growing  $Al_{1-x-y}In_xGa_yN$   $(0 \le x \le 1, 0 \le y \le 1, x+y \le 1)$  of the  $SiN/Al_{1-x-y}In_xGa_yN$   $(0 \le x \le 1, 0 \le y \le 1, x+y \le 1)$  superlattice buffer layer is between about  $200^{\circ}C$  and  $900^{\circ}C$ .

- 5 12. The method for manufacturing a light-emitting device according to claim 9, wherein the substrate is a transparent substrate.
  - 13. The method for manufacturing a light-emitting device according to claim 9, wherein the substrate is a sapphire substrate.

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- 14. The method for manufacturing a light-emitting device according to claim 9, wherein a material of the substrate is selected from the group consisting of Al<sub>2</sub>O<sub>3</sub>, SiC, Si, GaN and GaAs.
- 15. The method for manufacturing a light-emitting device according to claim 9, wherein a thickness of the SiN/Al<sub>1-x-y</sub>In<sub>x</sub>Ga<sub>y</sub>N ( $0 \le x \le 1$ ,  $0 \le y \le 1$ ,  $x+y \le 1$ ) superlattice buffer layer is between about 10Å and 2000Å.
- 16. The method for manufacturing a light-emitting device according to claim 9,
  20 wherein a number of SiN/Al<sub>1-x-y</sub>In<sub>x</sub>Ga<sub>y</sub>N (0≤x≤1, 0≤y≤1, x+y≤1) structures in the SiN/Al<sub>1-x-y</sub>In<sub>x</sub>Ga<sub>y</sub>N (0≤x≤1, 0≤y≤1, x+y≤1) superlattice buffer layer is greater than or equal to 2.
- 17. The method for manufacturing a light-emitting device according to claim 9, wherein a composition of the SiN/Al<sub>1-x-y</sub>In<sub>x</sub>Ga<sub>y</sub>N  $(0 \le x \le 1, 0 \le y \le 1, x+y \le 1)$

superlattice buffer layer is selected from the group consisting of a  $Al_{1-x-y}In_xGa_yN$  ( $0 \le x \le 1$ ,  $0 \le y \le 1$ ,  $x+y \le 1$ )/SiN structure and a SiN/ $Al_{1-x-y}In_xGa_yN$  ( $0 \le x \le 1$ ,  $0 \le y \le 1$ ,  $x+y \le 1$ ) structure, and a material in contact with the substrate is selected from the group consisting of SiN and  $Al_{1-x-y}In_xGa_yN$  ( $0 \le x \le 1$ ,  $0 \le y \le 1$ ,  $x+y \le 1$ ).

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18. The method for manufacturing a light-emitting device according to claim 9, wherein the light-emitting device is selected from the group consisting of a light-emitting diode and a laser diode.

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